

CLAIMS

1. Control device for operating a load circuit having an inductive load, comprising a control stage which generates a pulse-width-modulated control signal with measuring disconnection intervals provided in this control signal, a power stage feeding the load circuit and having an electronic switch controlled by the pulse-width-modulated control signal, and a freewheeling element connected in parallel with the load circuit, a current detection unit which for determining the current flowing into the load circuit prior to the measuring disconnection interval detects the duration of the freewheeling time in the measuring disconnection interval and calculates the current from this.
2. Control device according to claim 1, wherein the current detection unit detects the freewheeling time by means of an integration stage, which integrates a reference value over the freewheeling time.
3. Control device according to claim 2, wherein the integration stage is activated by an electronic switch controlled by the voltage in the load circuit during the time during which the voltage in the load circuit is less than zero.
4. Control device according to claim 2, wherein the integration stage carries out an integration of a voltage as a reference value over the freewheeling time.
5. Control device according to claim 4, wherein the integration stage comprises an RC element.

6. Control device according to claim 5, wherein the charging of the capacitor of the RC element is controlled by means of an electronic switch which can be controlled by the voltage in the load circuit.
7. Control device according to claim 2, wherein the value stored in the integration stage is erased after completion of the measuring disconnection interval.
8. Control device according to claim 7, wherein the value stored in the integration stage is erased by the recurring pulse-width-modulated control signal.
9. Control device according to claim 8, wherein the erasure takes place by a connection interval of the pulse-width-modulated control signal.
10. Control device according to claim 2, wherein the integration stage holds the value determined in the integration until the completion of the measuring disconnection interval.
11. Control device according to claim 1, wherein, in the case of an electric motor as the inductive load in the load circuit, for determining the current flowing into the load circuit in the measuring disconnection interval, the current detection unit measures the duration of the freewheeling time and the plateau value of the generator voltage after the freewheeling time.
12. Control device according to claim 11, wherein the current detection unit measures the generator voltage in the plateau region by multiple voltage samplings.

13. Control device according to claim 12, wherein the current detection unit carries out an averaging of the voltages measured in the multiple voltage samplings.
14. Control device according to claim 1, wherein, when determining the current by means of the detected measure of the freewheeling time, the current detection unit determines a value from a table with which the current can be determined by multiplication.